"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

24.7100,24.5600

77013
SOV/56-37-6-53/55

AUTHORS: Galkin, A. A., and Matyash, I. V.

TITLE: Structure of Solid Hydrogen

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 6, pp 1831-1832 (USSR)

ABSTRACT: Measurements were made of the nuclear magnetic resonance (n.m.r.) of mono- and polycrystalline hydrogen at 4.2°K. Samples were cylindrical in form and obtained under various directions of thermal gradient relative to the axis of the crystal. The width and the shape of lines of monocrystals in the rotational diagrams was found to be practically identical to those obtained with polycrystalline hydrogen. The diagrams exhibited no anisotropy of the second momentum in the n.m.r. This served as the confirmation that the crystalline hydrogen has tetragonal lattice. There are 5 references; 4 Soviet, 1 Dutch.

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Structure of Solid Hydrogen

77013
SOV/56-37-6-53/55

ASSOCIATION: Inst. Radiophys. and Electronics Acad. Sciences Ukrain. SSR, USSR (Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR, SSSR)

SUBMITTED: October 13, 1959

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

86749

S/120/60/000/006/025/045
E041/E521

6.8000 (3201, 1099, 1162)

AUTHORS: Galkin, A.A. and Korolyuk, A.P.

TITLE: Instrument for Studying Ultrasonic Absorption by Metals at Low Temperatures

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.6, pp.99-103

TEXT: The greatest interest lies in the absorption by magnetic materials under conditions where the mean free path of a conduction electron is significantly greater than the wavelength of the sound in the material, while the Larmor radius of the electron is comparable with the latter. The absorption coefficient varies periodically with magnetic field strength and the period is a measure of the electron impulse at the Fermi surface. The present article describes a method of recording automatically the propagated signal strength as a function of magnetic field in a series of monocrystals. Fig.1 shows the block diagram of the experimental arrangement. A pulse generator 26И (26I) drives simultaneously a modulator and a delay circuit. The modulator switches a high-frequency generator connected by coaxial cable to the transmitting crystal a. The crystal can be matched to the generator by varying

Card 1/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

86749

S/120/60/000/006/025/045
E041/E521

Instrument for Studying Ultrasonic Absorption by Metals at Low Temperatures

the cable length. The receiving crystal b is similarly joined to the receiver whose output is gated in the pulse selector drive by another generator 26I from the delay circuit. The selector output is peak detected, the selection of the appropriate pulse being made by varying the delay. The detected output goes to a recorder ЭПП-09 (EPP-09) which is a two-dimensional self-balancing potentiometer plotter. The field strength is measured by a germanium Hall-effect pick-off. Fig.2 is the circuit of the modulator and high-frequency generator. The latter oscillates between 50 and 250 Mc/s. The receiver is in two parts. The high-frequency part is an ordinary television receiver front-end working over the bands 50-100 and 160-230 Mc/s. Other frequencies are covered by heterodyning. The intermediate frequency amplifier circuit is in Fig.4. The centre frequency is 32 Mc/s, the bandwidth 3 Mc/s, amplification 10^5, sensitivity between 5 and 10 microvolts. Fig.4 is the delay circuit providing delays between 0 and 250 microsecs. Fig.5 is the pulse-selecting gate. Fig.6 is a cross-section through the

Card 2/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/120/60/000/006/025/045
E041/E521

Instrument for Studying Ultrasonic Absorption by Metals at Low Temperatures

crystal. Fig.7 shows how the sample is mounted. The sample may be rotated in the field. The magnet current is controlled from 0 to 8 amperes by the circuit of Fig.8. Fig.9 is an example of a record taken on a monocrystal of tin. The sound frequency was 220 Mc/s, parallel to the (101) axis. The H-vector lay in a perpendicular plane and made an angle of about 36° to the (100) axis. The two curves each took 3-4 minutes in recording. Manual methods would have taken 15-20 times as long. The overall error in measuring either coordinate does not exceed a few percent. There are 9 figures and 8 references: 4 Soviet and 4 non-Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR
(Institute of Radiophysics and Electronics, AS, UkrSSR)

SUBMITTED: October 13, 1959

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.A.; KOROLYUK, A.P.

Instrument for the study of the absorption of ultrasonic waves by metals at low temperatures. Prib. i tekh. eksp. no.6:99-103 N-D '60. (MIRA 13:12)

1. Institut radiofiziki i elektroniki AN USSR.
(Ultrasonic waves) (Metals)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

83745

S/056/60/038/004/038/048
B006/B056

24.6400
AUTHORS: Galkin, A. A., Matyash, I. V.

TITLE: Investigation of the Nuclear Resonance in an Adsorbed Gas

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1332 - 1334

TEXT: For the purpose of investigating the properties of adsorbed gases, nuclear paramagnetic resonance offers suitable means, because conclusions may be drawn from the shape of the resonance curves as to the interaction of the adsorbed molecules and the effect of the backing. In the present "Letter to the Editor", the authors describe investigations carried out by the spin-echo method, of nuclear paramagnetic resonance on thin layers of hydrogen, water, and methane adsorbed on activated carbon. The block diagram of the apparatus used is shown in Fig. 1, and is briefly described in the introduction. The magnetic field (3300 oe) was generated by a permanent magnet with a pole-piece diameter of 110 mm and a gap width of 40 mm. The apparatus permitted measurement of the longitudinal and transverse relaxation times (T_1 and T_2) within the

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Investigation of the Nuclear Resonance in an Adsorbed Gas

range from 10^{-4} to 10 sec. To determine T_1, three pulses were applied to the sample, and by analyzing the signal intensity of the stimulated echo as a function of the time between the first and the third pulse, the relaxation time was determined. Investigation of the spin-echo signal intensity as a function of the time between two pulses also made it possible to calculate T_2 and the self-diffusion coefficient (the experimental method is described in Ref. 5). Fig. 2 shows such a spin-echo oscillogram from which T_2 was determined for hydrogen adsorbed on carbon at $77^{\circ}K$. The T_1 and T_2 values thus determined as well as estimates of the self-diffusion coefficient (D) are given in a table for the layers investigated here. Also the activation energies (Q) were estimated and are also given, as well as the measured resonance-line widths ΔH. Thus, ΔH for a monomolecular H_2 layer at $77^{\circ}K$ equals 0.2 oe, and at $20.4^{\circ}K$ it equals 2 oe. For these two temperatures, T_1 was measured as amounting to 5.10^{-3} and 10.10^{-3} sec, respectively, and T_2 as $1.3 \cdot 10^{-3}$ and

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

83745

Investigation of the Nuclear Resonance in an Adsorbed Gas

S/056/60/038/004/038/048
B006/B056

$0.1 \cdot 10^{-3}$ sec, respectively; $D \approx 2.4 \cdot 10^{-2}$ cm^2/sec and $Q \approx 590$ joules/mole. There are 2 figures, 1 table, and 6 non-Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR (Institute of Radiophysics and Electronics of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: December 19, 1959

IX

Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

85675

S/056/60/038/006/017/049/XX
B006/B070

6.8000 (3201, 1099, 2404)
24.1800

AUTHORS: Galkin, A. A., Korolyuk, A. P

TITLE: Absorption of Ultrasonics in Zinc at Low Temperatures

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 6, pp. 1688 - 1694

TEXT: The oscillation of the ultrasonic absorption coefficient α with a change in the magnetic field has been studied several times in the past; the theory of this effect is due to V. L. Gurevich. Also two of the earlier papers of the present authors (Refs. 1, 2) were concerned with problems of the same nature. Now, the behavior of α in a strong magnetic field is studied for the case when $l \gg \lambda \gg r$ (l - mean free path of the electrons; r=cp/eH is the Larmor radius; λ - ultrasonic wavelength). The behavior of α is essentially related to the asymptotic behavior of the electrical conductivity tensor. A theoretical study of this was made by Gurevich and E. A. Kaner (Refs. 9, 8) who showed that data on the topology of the Fermi surface

Card 1/5

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Absorption of Ultrasonics in Zinc at Low Temperatures

S/056/60/038/006/017/049/XX
B006/B070

can be obtained by studying the anisotropy of α in a magnetic field. The experiments described here were carried out on single crystals of zinc by the method of Obreimov-Shubnikov. The metal was 99.9998% pure, and had a resistivity ratio $R_{4.2}/R_{300}=2\cdot10^{-4}$. The techniques of preparing the specimens, of producing the ultrasonic waves (60, 100, 180, and 220 Mc/sec), and of the measurement are described in the introduction. The periods of oscillation of α were measured for different orientations of $\vec{H}$ which could be rotated in a plane perpendicular to $\vec{k}$. Fig. 1 shows one of these oscillation curves at 220 Mc/sec. Fig. 2 shows the number of oscillations as a function of 1/H for different directions of $\vec{H}$ in the $(10\bar{1}0)$ plane. In Fig. 3, a, b, and c show the angular dependence of the extreme diameters of the Fermi surface (perpendicular to $\vec{H}$) on rotation of $\vec{H}$ and the planes $(11\bar{2}0)$, (0001), and $(10\bar{1}0)$, respectively. Fig. 4 shows the dependence of the difference of α-values with and without a field (7000 oe) on the direction of $\vec{H}$. a: $k \parallel [0001]$; b: $k \parallel [10\bar{1}0]$; c: $k \parallel [11\bar{2}0]$. $T=4.2^{\circ}K$; $\nu = 60$ Mc/sec. According to the theory (Ref. 6), a change in the diameter of the electron orbit in relation to λ corresponds to each oscillation of α

Card 2/5

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Absorption of Ultrasonics in Zinc at Low Temperatures

S/056/60/038/006/017/049/XX
B006/B070

in the magnetic field. The relation $l = r\lambda(n+1)$ holds for the mean free path of electrons in a weak field. Another possibility of determining l is to measure the component of the electron momentum perpendicular to $\vec{k}$ and $\vec{H}$ ($p_\perp$), and the minimum field in which oscillations appear ($p_\perp / r_{max} = eH_{min}/c$). The following path lengths were determined by these methods:

$\vec{k}$ direction	Path length [mm] according to the number of oscillations	according to $p_\perp$	Temperature [°K]
[0001]	0.5	0.6	1.65
[10$\bar{1}$0]	0.22	0.2	4.2
[11$\bar{2}$0]	0.27	0.24	1.65

Thus, the electron path length also shows anisotropy. The results are discussed in the conclusion. The values obtained for the extreme diameters of the Fermi surface show that the law of dispersion of

Card 3/5

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

85675

Absorption of Ultrasonics in Zinc at Low Temperatures

S/056/60/038/006/017/049/XX
B006/B070

electron energy deviates largely from the quadratic form. It is concluded from the anisotropy of α in a strong field that the Fermi surface of zinc is an open surface of the sixth order in the direction of the symmetry axis. E. A. Kaner and M. I. Kaganov are thanked for discussions, and V. I. Bogatov for supplying liquid helium. There are 4 figures, 1 table, and 11 references: 7 Soviet, 3 US, and 1 British

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR
(Institute of Radiophysics and Electronics of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: January 10, 1960

Card 4/5

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Galkin, A. A.

82594

24.7700
24.5600

S/056/60/039/01/01/029
B006/B070

AUTHORS: Bezuglyy, P. A., Galkin, A. A., Korolyuk, A. P.

TITLE: Investigation of the Anisotropy of the Energy Gap in Superconducting Tin

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 1 (7), pp. 7-12

TEXT: The authors investigated the temperature dependence of the ultrasonic absorption coefficient in different directions of single crystals of superconducting tin. They describe the methods of investigation and present the results. The method of energy gap investigation is based on the determination of the difference between the curves $\alpha_s/\alpha_n = f(T)$ when the ultrasonics is propagated along a binary (C_2) and a tetragonal crystal axis. From this difference the anisotropy of the energy gap may be determined. α_s and α_n are the electronic ultrasonic absorption coefficients in the superconducting and the normal state respectively. They are related to the width $2\varepsilon_0$ of the energy gap by

Card 1/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Investigation of the Anisotropy of the Energy Gap in Superconducting Tin

S/056/60/039/01/01/029
B006/B070

the relation $\alpha_s/\alpha_n = 2/(e^{\varepsilon_o/kT} + 1)$. To investigate the influence of the lattice anisotropy on the energy spectrum of electrons in a semiconductor, the temperature dependence and absorption coefficients of longitudinal supersonics was investigated by means of an apparatus described here in detail. Fig. 1 shows a block diagram of the measuring device. The generator works at 70 Mc/sec, the quartz emitter receives 2500-3000 pulses per second for a duration of $(1 \div 1.5)\cdot 10^{-6}$ sec. A small sphere of single crystals of tin was used as a sample. It had a diameter of 13-15 mm, and on it, cut surfaces of 5-6 mm diameter perpendicular to the crystallographic axes were produced by electrocorrosion. Onto these surfaces quartz emitters and receivers were cemented in vacuum and on them small plates of brass of 5-6 mm diameter and a thickness of 0.2-0.3 mm. For very pure crystals of tin the condition that the mean free path of the electrons be large in comparison to the ultrasonic wavelength was very well fulfilled at helium temperature. The temperature dependence of ultrasonic absorption coefficients was measured simultaneously in two different directions at temperatures down to $1^{\circ}K$. Fig. 2 shows the Dewar for helium in which the measurements were carried out.

Card 2/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

82594

Investigation of the Anisotropy of the Energy Gap in Superconducting Tin

S/056/60/039/01/01/029
B006/B070

The temperature of the sample was determined from the saturation vapor pressure of helium. The results are shown in diagrams. Fig. 3 shows α_s/α_n between 1° and $4^\circ K$ taken along two mutually perpendicular C_2 axes. The measured values (full and empty circles) all lie on one line which shows that the physical properties are the same in the two directions. Fig. 4 shows the same for C_2 and C_4 axes. Here the anisotropy of the energy gap is clearly seen. Measurements made on two samples gave uniform results. For the absolute value of the electronic part of the ultrasonic absorption coefficients in the normal state in the neighborhood of T_c, the following results are obtained: $\alpha_n = (47.6 \pm 0.2)$ decibel/cm $-(C_2)$, and $\alpha_n = (21.4 \pm 0.2)$ decibel/cm $-(C_4)$. Fig. 5 shows $\log(\alpha_s/\alpha_n) = f(T_c/T)$. From the slope of the straight line portion of the curve, the energy gap width at absolute zero may be determined to be $(3.5 \pm 0.2)kT_c$ for the C_2-axis and $(3.1 \pm 0.1)\ kT_c$ for the C_4-axis. Besides the anisotropy in the temperature dependence of the absorption coefficients, an anisotropy

Card 3/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

82594

Investigation of the Anisotropy of the Energy Gap in Superconducting Tin

S/056/60/039/01/01/029
B006/B070

of the transition temperature T_c is also established. For the C_2-axis T_c lies about $0.004^{\circ}K$ higher than for the C_4-axis. The authors thank A. I. Berdovskiy and E. I. Ponomarenko for cooperation in the measurements and V. L. Karpachevskiy and B. N. Aleksandrov for help in the preparation of the sample. There are 5 figures and 13 references: 5 Soviet, 6 American, 1 British, and 1 Dutch.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: January 12, 1960

Card 4/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

BEZUGLYY, P.A.; GALKIN, A.A.

Anisotropy of the energy slit in tin in the plane of the binary axes of a crystal. Zhur. eksp. i teor. fiz. 39 no.4:1163-1164 O '60. (MIRA 13:11)

(Tin crystals)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

88423

S/056/60/039/006/007/063
B006/B056

24.7700 (1043, 1143, 1559)

AUTHORS: Galkin, A. A., Kaner, E. A., Korolyuk, A. P.

TITLE: Investigation of Ultrasonic Absorption by Metals in a Magnetic Field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 6(12), pp. 1517-1528

TEXT: The characteristics of ultrasonic absorption in metals at low temperatures under conditions at which the mean free path l of the electrons is very large with respect to the acoustic wavelength λ have already repeatedly been investigated both theoretically and experimentally, above all the periodic change in the ultrasonic absorption coefficient α as a function of H^{-1}. The first theoretical calculations are by Fermi and V. L. Gurevich. In the present paper, the theoretical and experimental results are given, and compared for tin and indium. First, the magnetoacoustic resonance and the oscillation of α are investigated for a strong magnetic field, as well as the conditions $\vec{k} \perp \vec{H}$ ($\vec{k}$ - wave vector) and $\lambda \ll 2\pi r \ll l$.

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

88423

Investigation of Ultrasonic Absorption by Metals in a Magnetic Field

S/056/60/039/006/007/063
B006/B056

For tin- and indium crystals typical oscillation diagrams are shown and discussed. Two different types of oscillations are said to occur in tin: Anharmonic resonance oscillations and sinusoidal oscillations. Those of the first kind are ascribed to the existence of an open Fermi surface; the period of the open surface, calculated on the basis of oscillation periods, is in agreement with crystallographic data. A study was made of the anisotropy of ultrasonic absorption in a strong magnetic field and when the condition $r \ll \lambda \ll 1$ is satisfied (r is the characteristic parameter of the electron orbit), and theoretical and experimental results were intercompared. The anisotropy of the oscillation periods along the various crystallographic directions was analyzed, and the anisotropy and frequency dependence of α saturation was examined. An analysis of periods, amplitudes, oscillation-phases and the shapes of absorption curves for tin are in agreement with a Fermi surface model, which is a plane network of "corrugated" cylinders directed along the [110] and [1$\bar{1}$0] crystallographic axes. The causes for some quantitative discrepancies between theory and experiment are discussed. A. I. Akhiyezer, N. Ye. Alekseyevskiy, Yu. P. Gaydukov, B. N. Aleksandrov, and B. I. Verkin are mentioned. There are 8 figures and 25 references: 16 Soviet, 7 US, 1 Japanese, and

Card 2/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

88423

Investigation of Ultrasonic Absorption by Metals in a Magnetic Field

S/056/60/039/006/007/063
B006/B056

1 Canadian.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR
(Institute of Radiophysics and Electronics of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: June 22, 1960

Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

9,2585 1147 1115 1099

83555
S/020/60/134/001/006/021
B019/B060

AUTHORS: Galkin, A. A., Kaner, E. A., Korolyuk, A. P.

TITLE: A New Kind of Oscillations of the Ultrasonic Absorption Coefficient in Metals in a Magnetic Field

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1, pp. 74-76

TEXT: The authors show in this article that under certain conditions the variation of the ultrasonic absorption coefficient in metals has a resonance character in the presence of a magnetic field. Fig. 1 shows the ultrasonic absorption coefficient in tin as a function of the magnetic field. The diagram was drawn with $\vec{H} \perp \vec{k}$ in the (110) plane, and $\vec{k}$ was in the direction of the [101] axis. The marked maxima are due to relation (1): $\bar{\dot{\beta}} = \frac{\vec{k}\vec{v}}{2\pi} T \neq 0$, where $\bar{\beta}$ and $\vec{v}$ are the shift and velocity of the electron averaged over the period. The existence of resonance oscillations in certain angular intervals was revealed by examinations of

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

83555

A New Kind of Oscillations of the Ultrasonic Absorption Coefficient in Metals in a Magnetic Field

S/020/60/134/001/006/021
B019/B060

tin single crystals at a frequency of 220 megacycles. Fig. 3 shows the stereographic projections of the wave vectors $\vec{k}$ and the magnetic field $\vec{H}$, where oscillations of this kind were observed. At $\vec{k} \perp \vec{H}$, resonance oscillations are observed in connection with open trajectories. The authors conclude from an analysis of these stereographic projections that the direction of the open periodic trajectory coincides with the [110] axis; this is in accordance with the results obtained from a galvanomagnetic investigation (Ref. 5). The calculation by a formula developed by Galkin et al. (Ref. 2) led to a period of $15 \cdot 10^{-20}$ g·cm/sec along an open trajectory. This value agrees with the one determined by Chambers (Ref. 6) for the Brillouin zone. There are 3 figures and 6 references: 4 Soviet, 1 US, and 1 Canadian.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk USSR (Institute of Radiophysics and Electronics of the Academy of Sciences UkrSSR)

Card 2/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

25207
S/056/61/040/006/028/031
B125/B202

24,7900

AUTHORS: Galkin, A. A., Naberezhnykh, V. P.

TITLE: Paramagnetic resonance in metallic aluminum

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 6, 1961, 1876-1877

TEXT: The authors describe experiments made for the study of paramagnetic electron absorption in monocrystalline aluminum with the remanent resistance $6.7 \cdot 10^{-5}$ which corresponds to a mean free path of $\sim 2 \cdot 10^{-2}$ cm of the electron. The electrolytically polished sample having a diameter of 10 mm and a thickness of ~3 mm served as bottom of the cylindrical resonant cavity in which oscillations of the type H_{0n} were excited. In view of the sufficiently perfect surface, sufficiently thin skin oscillations of the cyclotron resonance could be observed at [illegible] K. The dependence of absorption on the magnetic field strength was studied by means of a high-sensitive spectrometer ($36 \cdot 10^9$ cps) in the temperature interval 300 - 4.2°K. At 300 and 77°K a wide symmetrical line with weak temperature-dependent intensity became visible. For [illegible] absorption

Card 1/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

25207
S/056/61/[illegible]/[illegible]/[illegible]
B125/B202

Paramagnetic resonance in metallic ...

probably is due to electrons. This line shows a strong asymmetry at hydrogen temperatures which becomes somewhat sharper on cooling to 4.2° K. The figure shows dR/dH (R - surface resistivity) as a function of H at T = 4.2°K. The results of the studies held for a sample whose axis of the fourth order is perpendicular to the surface. The half width of the line is constantly ~40 oersteds in the temperature range 20 - 4° K. This corresponds to a spin relaxation time of $T_1 \sim 5 \cdot 10^{-10}$ sec. According to measurements made by B.I. Aleksandrov, the static resistivity of aluminum strongly changes in the temperature range 20 - 4°K. This change and the weak temperature dependence of the line width suggest that the spin relaxation time is determined by impurities with strong spin-orbit coupling. The lacking of an anisotropy of the line width and the g-factor (which is equal to 2.06) can be explained by the widening of the line as a result of the strong degree of impurities. The shape of the absorption line has hitherto not been explained. With alkali metals the positive part of the derivative dR/dH is much greater than the negative one. With aluminum and copper the opposite is the case. This is formally explained by the participation of particles with inverse spin sign in paramagnetic resonance. Probably, the theory by F. J. Dyson (Phys.Rev., 98, 349, 1955) in this case does not fully correspond to the facts because $\mu H \ll kT$ holds and because

Card 2/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

τ_{spin} is of the same order of magnitude as the impact time. The authors also observed a dependence of the signal intensity on the inclination of the magnetic field relative to the surface of the sample. The change of the signal amplitude is in qualitative agreement with the theory by M. Ya. Azbel', V. I. Gerasimenko, I. M. Lifshits (ZhETF, 32, 1212, 1957; 35, 691, 1957). There are 1 figure and 8 references: 2 Soviet-bloc and 6 non-Soviet-bloc. The two most recent references to English-language publications read as follows: G. Feher, A. F. Kip. Phys.Rev., 98, 337, 1955; F.J. Dyson. Phys.Rev., 98, 349, 1955.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk Ukrainskoy SSR (Physicotechnical Institute for Low Temperatures of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: April 12, 1961

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

21559

24.7900 (1035, 1055, 1163, 1469)

S/020/61/137/003/007/030
B104/B214

AUTHORS: Galkin, A. A. and Neberezhnykh, V. P.

TITLE: Paramagnetic resonance on conduction electrons of copper

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 549-550

TEXT: This paper was read at the XIII Vsesoyuznoye soveshchaniye po spektroskopii (XIII All-Union Conference on Spectroscopy) held in June, 1960. Experiments are described of studying the surface resistance of copper in a magnetic field H for frequencies up to $\nu = 3.6 \cdot 10^{10}$ cps. The purpose of the experiments was to observe the paramagnetic resonance. The specimen was a copper resonator (wave guide) made of pure electrolytic copper having the ratio $R_{4.2°K}/R_{300°K}$ less than 10^{-3}. This value rose to 10^{-2} due to Cu deformation during the construction of the resonator. The surface of the resonator was polished electrolytically. Fig. 1 shows graphically the values $R(H)/R(0)$ as a function of the magnetic field strength at temperatures of 77°K and 4.2°K. From the value of the field strength for the maximum, the value of the g factor is determined

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

21559
S/020/61/137/003/007/030
B104/B214

to be about 2.1. It is found that the form of the absorption line depends essentially on the temperature; that the intensity of the line with the g-factor 2.1 increases with a decrease in temperature, the blurred lines broadening simultaneously and disappearing completely at the temperature of helium. To clarify the nature of observed lines the temperature dependence of the intensity of these lines and the absorption lines of the radical were studied. The experiments showed that the line intensity of the radical decreases to a quarter of its value as the temperature was increased from 77 to 300°K, while that of the absorption line of the resonator remains practically constant. With the help of Dyson's theory the authors conclude that the lines with $g = 2.1$ are related to the spin relaxation of the conduction electrons. The contraction of these lines on change of temperature is related to the increase of the spin relaxation time: $1.7 \cdot 10^{-10}$ seconds at 300°K; $2.1 \cdot 10^{-10}$ seconds at 77°K; $4.2 \cdot 10^{-10}$ seconds at 4.2°K. The broadening of the second absorption line is caused by the decrease of the electron diffusion time from the skin layer into the metal. Furthermore, the experiment showed symmetric absorption lines which fact is in contradiction with the results of the

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

theory. This is because the conditions in the experiment are different from those assumed in the derivation of the theoretical law. Professor D. P. Zosimovich is thanked for making available a very pure copper foil prepared in the laboratory of the Institut neorganicheskoy khimii AN USSR (Institute of Inorganic Chemistry of the Academy of Sciences UkrSSR). There are 1 figure and 10 references: 2 Soviet-bloc and 8 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk USSR
(Institute of Physics and Technology of Low Temperatures of the Academy of Sciences UkrSSR)

PRESENTED: September 24, 1960, by I. K. Kikoin, Academician

SUBMITTED: September 23, 1960

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

35097

S/185/62/007/001/007/014
D299/D302

24.6300

AUTHORS: Halkin, O.O., and Matyash, I.V.

TITLE: Study of nuclear magnetic relaxation of adsorbed gases by the spin-echo method

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 1, 1962, 54 - 64

TEXT: The temperature dependence was studied of the relaxation time T_1 and T_2 of hydrogen molecules and helium atoms, adsorbed on charcoal and silica gel. T_1 and T_2 were measured by E.L. Hahn's method (Ref. 1: Phys. Rev., 80, 580, 1950), as well as by the method of H.Y. Carr and E.M. Purcell (Ref. 2: Phys. Rev., 94, 630, 1954). The measuring apparatus included a high-frequency modulator, a h.-f. bridge, h.-f. amplifier, and the oscillograph ИО-4 (IO-4). A magnetic field of 3300 oersted was produced by a permanent magnet. A figure shows the temperature dependence of the spin-lattice relaxation time T_1 of He^3-atoms, adsorbed on charcoal. Although the distance between the atoms (10-7 cm) was by far greater than in the liquid state, the re-

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

laxation time $T_1 \approx 10^{-2}$ sec., i.e. by several orders of magnitude smaller than for gaseous or liquid He^3. Such a decrease in relaxation time can be only explained by the effect of the adsorbent surface; this effect was found to be equivalent to the effect of oxygen at a pressure of 10 atm. Another figure shows the temperature dependence of the spin-spin relaxation time T_2. T_2 is almost by one order of magnitude smaller than T_1. This is further proof that the relaxation mechanism under consideration differs from that for gases. The magnitude of T_2 ($\sim 10^{-3}$ sec) shows that the spin-spin relaxation time is also influenced by interaction with the paramagnetic backing. If the adsorbent surface has paramagnetic particles, it is possible to estimate the diffusion coefficient D, by means of a formula involving T_1 and the number of paramagnetic particles N_{par}; one obtains $D \approx 10^{-4}$ $cm^2/sec.$, for $N = 10^{20}$ cm^{-3}. In the case of adsorbed hydrogen, it is necessary to take into account both inter- and intramolecular interactions. From the formula for spin-spin relaxation in the presence of intramolecular interactions it follows that the correlation time τ_c $\approx 10^{-8}$sec. The temperature dependence of T_2 can be explained by the

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

increase in τ_c with decreasing temperature. An analysis of the experimental results shows that the temperature dependence of T_2 is mainly determined by intermolecular interactions, and the dependence on pressure by intramolecular relaxation. The obtained values of T_1 and T_2 and their dependence on temperature and pressure, do not differ appreciably from those for hydrogen adsorbed on silica gel. There are 11 figures and 13 references: 1 Soviet-bloc and 12 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: George W. Smith, Robert M. Housley, Phys. Rev., 117, 732, 1960; W.M. Fairbank, E. Adams, Dwight, Physica, 24, 134, 1958; I.M. Goodkind, W.M. Fairbank, Phys. Rev. Lett., 4, 458, 1960; R.H. Power, Phys. Rev., 117, 1185, 1960.

ASSOCIATION: Fizyko-tekhnichnyy instytut nyz'kykh temperatur AN URSR (Physico-Technical Institute of Low Temperatures of the AS UkrRSR), Kharkiv

SUBMITTED: July 4, 1961

Card 3/3

X

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

33998

S/056/62/042/001/013/048
B104/B102

24,1800 (1063, 1147, 1482)

AUTHORS: Bezuglyy, P. A., Galkin, A. A., Pushkin, A. I., Khomchenko, A. I.

TITLE: Magnetoacoustic resonance in aluminum

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 84-86 Ja '62

TEXT: Single crystals (10 mm in diameter and 2 mm thick) were grown from aluminum, for which $R_{4.2^\circ K}/R_{293^\circ K} = 6.7 \cdot 10^{-5}$. Using a pulse technique (A. A. Galkin, A. P. Korolyuk. PTE, 6, 199, 1960), the dependence of the absorption coefficient for longitudinal ultrasonic waves of 200 Mc/sec on the magnetic field strength was studied at field strengths of up to 4000 oe and at 4.2°K. An ultrasonic crystal attenuator was interposed in addition to the specimen between the receiving and the emitting piezoelectric crystal in order to separate the acoustic pulses accurately. The ultrasonic wave vector was parallel to the [111] direction of the single crystal with a maximum error of 5°. The magnetic field was always perpendicular to the wave vector. The transmission coefficient was

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

33998
S/056/62/042/001/013/048
B104/B102

Magnetoacoustic resonance in aluminum

determined by a recorder as a function of the magnetic field strength. Two oscillation periods were detected in the inverse field: $\nu\Delta H^{-1} \approx 6 \cdot 10^4$ $sec^{-1}oe^{-1}$ and $\nu\Delta H^{-1} \approx 32 \cdot 10^4$ $sec^{-1}oe^{-1}$. The anisotropy in the oscillation effects was examined, and three periods in an approximate ratio of 1:3:6 were established in a number of directions. The three different periods are attributed to the three electron groups with different effective masses, which have been detected by other scientists in testing aluminum with cyclotron resonance (D. N. Langenberg, T. W. Moore. Phys. Rev. Lett., 3, 137, 1959; E. Fawcett. Phys. Rev. Lett., 3, 139, 1959). In this way, the Fermi limiting velocities can be determined by a joint investigation of magnetoacoustic and cyclotron resonances. The results do not contradict W. A. Harrison's model of the Fermi surface of aluminum (Phys. Rev., 116, 555, 1959; 118, 1182, 1960; 118, 1190, 1960). A. F. Prikhod'ko, Corresponding Member AS UkrSSR, is thanked for having made work with liquid helium possible, E. I. Ponomarenko for having developed the high-sensitive receiver and for assistance in the measurements, and B. N. Aleksandrova for having prepared the high-purity aluminum. There are 1 figure and 10 references: 2 Soviet and

Card 2/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

33998

Magnetoacoustic resonance in aluminum

S/056/62/042/001/013/048
B104/B102

8 non-Soviet. The four most recent references to English-language publications read as follows: B. W. Roberts. Phys. Rev., 119, 1889, 1960; T. Alsen, R. W. Morse. Bull. Amer. Phys. Soc., 4, 167. 1959; R. W. Morse, J. D. Gavenda. Phys. Rev. Lett., 2, 250, 1959; J. R. Neighbours, G. A. Alers. Phys. Rev. Lett., 3, 265, 1959.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of Low Temperatures of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: August 4, 1961

IX

Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/181/63/005/001/031/064
B102/B186

AUTHORS: Galkin, A. A., Naberezhnykh, V. P., and Mel'nik, V. L.

TITLE: Cyclotron resonance in aluminum

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1963, 201 - 210

TEXT: Langenberg and Moore (Phys. Rev. Letters, 3, 137, 1959) and Fawcett (Phys. Rev. Letters, 3, 139, 1959) have obtained divergent results on studying cyclotron resonance in aluminum. Therefore the crystallographic planes (001), (110) and (111) of aluminum were more thoroughly studied. The measurements were made with 8-mm radiospectroscope at $3.6 \cdot 10^{10}$ cps; its sensitivity was $\sim 6 \cdot 10^{-12}$ moles diphenylpicrylhydracyl at 300°K that corresponds to $\Delta R/R \sim 5 \cdot 10^{-7}$. The constant magnetic field strength could be changed between 0 and 11 koe; magnetic field modulation was carried out at 33 cps with a sound generator. The main part of the measuring arrangement consisted of the electromagnet in whose gap a cylindrical resonator with high-quality H_{011} mode and Hall transmitter were placed. The latter was connected with recorder and oscilloscope. The magnet could be rotated

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

by an electromotor in the sample plane over the full angle. All measurements were made at 4.2°K with electrolytically polished samples having a reduced resistivity of $\rho_{4.2^\circ K}/\rho_{300^\circ K} = (6\text{-}7)\cdot 10^{-5}$. From the cyclotron resonance spectra it could be seen that there was a relation between the number of oscillations observed and the electron mass: For electrons with $\sim 1.5\ m_o$ 8 - 9 harmonics arose and for $\sim 3.2\ m_o$ up to 13. For electrons with masses below $0.5\ m_o$ only the fundamental resonances exist. All resonances observed belong to orbits of the large Fermi surface of holes of the second Brillouin zone. The orbits were identified by using the results of a detailed study of the effective mass anisotropies on the planes (001), (110) and (111). This identification agrees well with the model of a multiply connected Fermi surface of the third Brillouin zone (Harrison, Phys. Rev. 116, 3, 555, 1959; 118, 5, 1182, 1960). There are 8 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur AN USSR, Khar'kov (Physicotechnical Institute of Low Temperatures AS UkrSSR, Khar'kov)

SUBMITTED: July 27, 1962

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/181/63/005/001/059/064
B104/B186

AUTHORS: Bratashevskiy, Yu. A., Galkin, A. A., and Ivanchenko, Yu. M.

TITLE: Resonant absorption in InSb on the band carriers

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1963, 356-359

TEXT: An experiment with n-type InSb is described which made it possible to observe the absorption band produced by cyclotron resonance and, for the first time, also other lines with electrical excitation of the band carriers. At nitrogen temperature the carrier concentration was $8 \cdot 10^{13}$ cm^{-3}, the mobility was $3 \cdot 10^5$ cm^2/v. Lenticular samples of 0.45 mm diameter and 0.2 mm height were used. They were studied in the electric field of a rectangular resonator of a superheterodyne radiospectroscope (75,000 Mc/sec). At oxygen temperature, intense cyclotron resonance lines were observed in transverse polarization, these being shifted into the region of stronger magnetic fields by plasma effects. Four other lines were observed when the cyclotron resonance lines were compensated by adjusting the longitudinal polarization. The lines disappeared when the samples were placed into the resonator loop, which proved them to be electrically excited. On continuous

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Resonant absorption in InSb on...

transition from longitudinal to transverse polarization the intensity ratio of these lines to that of cyclotron resonance dropped even at small angles of deflection. Combined resonance is assumed to exist in this case. There is 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur AN USSR, Khar'kov (Physicotechnical Institute of Low Temperatures AS UkrSSR, Khar'kov)

SUBMITTED: September 24, 1962

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

MATYASH, I.V.; GALKIN, A.A. [Halkin, O.O.]; TARASENKO, L.M.

Proton magnetic relaxation in methane. Ukr. fiz. zhur. 8 no.1:39-41 Ja '63. (MIRA 16:5)

1. Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR, Khar'kov.

(Protons) (Nuclear spin) (Methane)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.A

S/185/63/008/001/012/024
D234/D308

AUTHORS: Halkin, O. O., Naberezhnykh, V. P. and Mel'nyk, V.L.

TITLE: Anisotropy of effective masses of the basic group of electrons in aluminum

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 1, 1963, 81-86

TEXT: The authors give the results of an experimental study of large effective masses in the (001) plane, corresponding to electrons on the large Fermi surface of the second zone. All experiments were carried out at 3.6×10^{10} c/s and 4.2°K. The results agree qualitatively with the model of Fermi surface proposed by Harrison (Phys. Rev., 118, 1182, 1960). There are 6 figures.

ASSOCIATION: Fizyko-tekhnichnyy instytut nyz'kykh temperatur AN URSR (Physico-Technical Institute of Low Temperatures of the AS UkrSSR), Kharkiv

SUBMITTED: October 2, 1962

Card 1/1

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

45361
S/056/63/044/001/015/067
B100/B180

24.7000

AUTHORS: Bezuglyy, N. A., Galkin, A. A., Pushkin, A. I.

TITLE: Magneto-acoustic oscillations and the Fermi surface in aluminum

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 71 - 79

TEXT: The anisotropy of the magneto-acoustic oscillations in aluminum was studied by a method described by A. A. Galkin, A. P. Korolyuk, PTE, 6, 199, 1960, to get information of the Fermi surface (V. L. Gurevich, ZhETF, 37, 71, 1959). Small aluminum disks were examined at 4.2°K at ultrasonic frequencies of 183 and 223 Mcps in magnetic fields of up to 2500 oe. The sound wave vector was directed along the principal crystallographic axes [110], [100], [111]. The results showed the shape and dimensions of the second zone to be in good agreement with the Fermi surface proposed by W. A. Harrison (Phys. Rev., 116, 555, 1959; 118, 1882, 1960; 118, 1190, 1960) who used the model of almost free electrons. They also show that there are no sharp intersections on the surface of the second zone. In a previous paper (ZhETF, 42, 84, 1962), slower magneto-

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Magneto-acoustic oscillations and ... S/056/63/044/001/015/067
B108/B180

acoustic oscillations were observed. A study of their anisotropy may throw light upon the structure of the third zone. There are 9 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of Low Temperatures of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: July 21, 1962

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/056/63/044/001/023/067
B104/B144

AUTHORS: Galkin, A. A., Naberezhnykh, V. P., Mel'nik, V. A.

TITLE: Effective masses of electrons responsible for the de Haas - van Alphen effect in aluminum

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 127-129

TEXT: The cyclotron resonance was determined at 4.2°K on three Al single crystals, the surface of which lay in the (001), (110), and (111) planes with an accuracy of a few degrees. The resistance of the specimens was $\varrho_{4.2^\circ K}/\varrho_{300^\circ K} \approx 6 \cdot 10^{-5}$. The angular dependences of the effective masses of electrons obtained from the cyclotron resonances of electrons in the three principal crystallographic planes agree with the angular dependences of the periods of oscillations of the de Haas - van Alphen effect (E.M.Gunnersen. Phil. Trans. Roy. Soc., A249, 299, 1957). The oscillations of the de Haas - van Alphen effect and the cyclotron resonance are assumed to occur on the same Fermi surfaces. This

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

assumption is confirmed by the agreement between the effective masses determined by the cyclotron resonance method and from the temperature dependence of oscillations of the de Haas - van Alphen effect. Besides this, maximum effective masses were observed corresponding to orbits for which, whatever the reason, no oscillations of the de Haas - van Alphen effect could be found. The form of the Fermi surface cannot be determined from the angular dependence of the effective masses, but the electron orbits responsible for the angular dependence of the two effects can be identified. There is 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of Low Temperatures of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: August 8, 1962

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 10725-65 EWT(1)/EWT(m)/EWP(b) IJP(c)/ESD(t)/ESD(gs)/ASD(a)-5 JD

ACCESSION NR: AP4046394 S/0056/64/047/003/0825/0835

AUTHORS: Bezugly*y, P. A.; Galkin, A. A.; Zhevago, S. E.

TITLE: Investigation of the Fermi surface in gallium on the basis of magneto-acoustic effects

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 3, 1964, 825-835

TOPIC TAGS: gallium, Fermi surface, magnetoacoustic effect, ultrasound absorption, absorption coefficient

ABSTRACT: This work was intended to determine the topology of the constant-energy surfaces of gallium from the oscillations of the ultrasonic absorption coefficient in a magnetic field. The existing experimental data are inadequate to serve as a basis for comparison with the present model of the Fermi surface for gallium. For this purpose, the anisotropy of magnetoacoustic oscillations in gallium

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

single crystals was measured for a sound wave vector aligned along the a and c axes, at a temperature 4.2K, a longitudinal ultrasonic frequency 200 Mcs, and magnetic field strengths up to 500 Oe. The pulse technique described by A. A. Galkin and A. P. Korolyuk (PTE, no. 6, 199, 1960) was used, and some of the measurements were made at 1.9K. The results show that for a given sound wave direction there are two principal types of absorption-coefficient oscillations, short-period (type A) in fields above 100 Oe, and long-period (type B) in the 20--2,000 Oe range. A third type (C) is also observed at narrow angles (52--60°). The values of the observed periods and the character of their anisotropy are in qualitative agreement with the individual regions of the Fermi surface of the 7th, 8th, and 9th electron bands, constructed in the nearly free electron approximation. The causes of the observed discrepancies are discussed. "The authors thank I. O. Kulik for valuable discussions, B. N. Aleksandrov for preparing the samples, and N. S. Kharcherko for performing x-ray studies of the samples." Orig. art. has: 8 figures, 1 formula and

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 10725-65

ACCESSION NR: AP4046394

1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur Akademii nauk SSSR (Physicotechnical Institute of Low Temperatures, Academy of Sciences SSSR)

SUBMITTED: 01Apr64 ENCL: 00

SUB CODE: SS, GP NR REF SOV: 004 OTHER: 008

Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 34954-65 EWT(l)/EWT(m)/EEC(k)/EWP(t)/EWP(b) Pab LIP(c) JD

ACCESSION NR: AP5005287 S/0181/65/007/002/0480/0484

AUTHOR: Bezuglyy, P. A.; Galkin, A. A.; Zhevago, S. Ye. 26

TITLE: Investigation of magnetoacoustic effects in gallium at 210 Mc 25

SOURCE: Fizika tverdogo tela, v. 7, no. 2, 1965, 480-484 B

TOPIC TAGS: gallium, magnetoacoustic effect, Fermi surface, single crystal, ultrasound propagation, electron structure

ABSTRACT: Results are reported of an experimental investigation of magnetoacoustic effects in single-crystal samples of gallium, using longitudinal 210 Mc ultrasound in a transverse field with the wave vector parallel to the b-axis of the crystal, and in a longitudinal field with the wave vector parallel to each of the three principal axes. The same procedure and the same gallium samples were used in earlier research by the authors (ZhETF v. 47, 825, 1964), except that a different pair of quartz converters was used to obtain the 210 Mc frequency. All experiments were made at 4.2K. The results show that when the sound propagates along the b-axis of the crystal, the period of oscillations

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 31954-65

ACCESSION NR: AP5005287

reaches a maximum value (1.5×10^{-2} Oe^{-1} when the field is parallel to c) and decreases smoothly as the angle between the magnetic field and the a-axis decreases. Only two or three oscillations are observed in the entire angle interval, so that the accuracy with which the oscillation periods are determined is quite low. The oscillations themselves are irregular. The results do not agree with the previously published description of the central section of the 9th electron zone, and no check on the latter could be made because of lack of data at small angles and the small number of oscillations. In the case of a longitudinal magnetic field with the sound wave vector parallel to the a-axis, resonant oscillations were observed in the absorption coefficient, showing that the dispersion deviates greatly from quadratic. A distinguishing feature of these oscillations is, first, that the maxima on the absorption curve are considerably sharper than the minima, and that the relative widths of the maxima do not depend on the numbers of the maxima. Furthermore, the amplitude of each succeeding maximum decreases. All these results are likewise in disagreement with the forms given by the nearly-free-electron model for the Fermi surfaces. Orig. art. has: 5 figures and 3 formulas. [02]

Card 2/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 34954-65

ACCESSION NR: AP5005287

ASSOCIATION: Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR, Khar'kov (Physicotechnical Institute of Low Temperatures, AN UkrSSR)

SUBMITTED: 23Jul64 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 003 OTHER: 005 ATD PRESS: 3214

Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

VSEVOLOZHSKIY, Yu.V.; GALKIN, A.F., aspirant; GRIGOR'YEV, V.I., aspirant

Sudan grass as economic green fodder. Zhivotnovodstvo 23 no.5:54-55 My '61. (MIRA 16:2)

1. Direktor sovkhoza "Kommunist" Khar'kovskoy oblasti (for Vsevolozhskiy). 2. Khar'kovskiy sel'skokhozyaystvennyy institut (for Galkin, Grigor'yev).
(Sudan grass)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.F., kand.tekhn.nauk

Reed stacking for storage. Bum.prom. 37 no.11:10-11 N '62. (MIRA 15:12)

1. Nauchno-issledovatel'skiy institut po ispol'zovaniyu kamysha v stroitel'stve i promyshlennosti.
(Reed (Botany)—Storage)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.F., kand.tekhn.nauk

Testing the new type of reed harvesting machines. Bum.prom. [38] no.7:12-13 Jl '63. (MIRA 16:8)

1. NIIstroykamysh.
(Reed (Botany)) (Harvesting machinery--Testing)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A. F., Cand. Tech. Sci. (diss) "Investigation of Technology and Systems of Utilization of Machines in Harvesting of Grasses under Conditions of Volgo-Aktubinskiy Bottomland," Astrakhan', 1961, 28 pp. (Chelyabinsk Inst. of Mechaniz. and Electrif. of Agriculture, Volgograd Agri. Inst.) 250 copies (KL Supp 12-61, 265).

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

MIKHAYLOV, B.M.; GALKIN, A.F.

Synthesis and properties of B-tri-n-butymercaptoborazoles. Izv. AN SSSR. Otd. khim. nauk no.2:371-372 F '61. (MIRA 14:2)

1. Institut organicheskoy khimii im.N.D.Zelinskogo AN SSSR.
(Borazole)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

ZHDANOVICH, Ye.S.; GALKIN, A.F.; CHEKMAREVA, I.B.; BAULINA, G.A.; PREOBRAZHENSKIY, N.A.

Production of pyridinecarboxylic acid. Trudy VNIVI 8:11 '61. (MIRA 14:9)

1. Laboratoriya sinteza vitaminov gruppy B Vsesoyuznogo nauchno-issledovatel'skogo vitaminnogo instituta.
(Pyridinecarboxylic acid)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.F., inzh.

Determining the life of the cutter bar of a hay mower. Mekh. i elek. sots. sel'khoz. 19 no.4:24-26 '61. (MIRA 14:11)

1. Kharabalinskiy rayonnyy ispolnitel'nyy komitet, Astrakhanskoy oblasti.

(Mowing machines)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/062/62/000/004/005/013
B110/B101

S.v-40

AUTHORS: Mikhaylov, B. M., and Galkin, A. F.

TITLE: Organo-boron compounds. Communication 95. Synthesis of B-alkyl-B-dialkyl mercapto derivatives of borazol and some of their conversions

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, 1962, 619-623 (MIRA 15:4)

TEXT: The authors had found earlier (Izv. AN SSSR. Otd. khim. n. 1959, 172; ibid. 1961, 371; Dokl. AN SSSR, 127, 571 (1959); ibid. 127, 1023 (1959)) that alkyl mercapto derivatives of organo-boron compounds are highly reactive, and often surpass organo-boron halides with respect to synthesis. For this reason, the reaction of organo-metallic compounds with B-trimercapto derivatives of borazol was studied for the purpose of obtaining bifunctional borazol derivatives; the B-trimercapto derivatives had been obtained from lead mercaptides and B-trichloro borazols. 1 mole of n-butyl magnesium chloride with 1 mole of B-tri-n-butyl mercapto borazol (I) gives a 53% yield of B-n-butyl-

Card 1/8

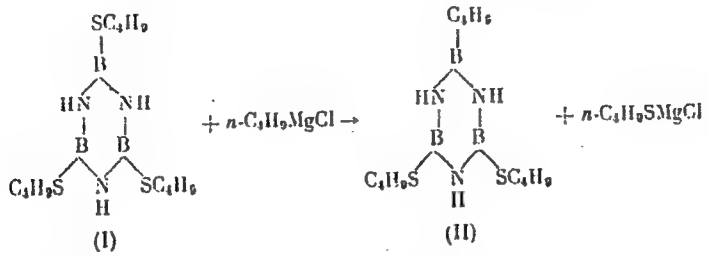
APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/062/62/000/004/005/013
B110/B101

Organo-boron compounds. ...

B-di-n-butyl mercapto borazol (II) (b.p. 115-120°C (0.2 mm Hg), $d_4^{20} = 0.9860$, $n_D^{20} = 1.5065$, MR = 95.33 ($C_{12}H_{30}B_3N_3S_2$)):



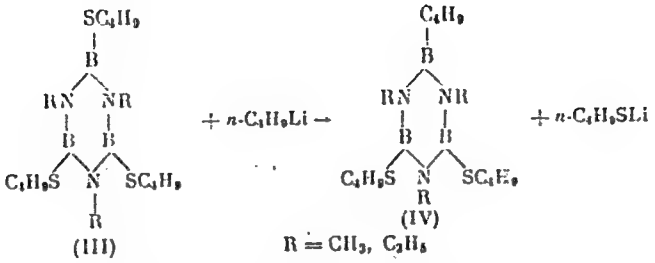
The reaction of 1 mole of B-trialkyl mercapto-N-trialkyl borazols (R = CH_3, C_2H_5) with 0.8 moles of n-butyl lithium showed a smoother, stepwise replacement of the alkyl mercapto groups by alkyl radicals. B-alkyl-B-dialkyl mercapto-N-trialkyl borazols were obtained in 62-65% yield:

Card 2/8

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Organo-boron compounds. ...



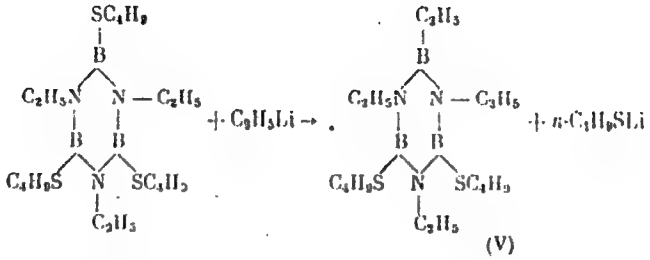
With the same ratio of reagents and with ethyl lithium, B-ethyl-B-di-n-butyl mercapto-N-triethyl borazol (V) is obtained with a yield of 62.5% (b.p. 161-163°C (0.15 mm Hg), d_4^{20} = 0.9826, n_D^{20} = 1.5080, MR = 113 ($C_{16}H_{38}B_3N_3S_2$)).

Card 3/8

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Organo-boron compounds. ...



(V)

Like the B-trialkyl mercapto derivatives of borazol, these B-alkyl-B-di-n-butyl mercapto-N-trialkyl borazols can react with various reagents with active hydrogen: 2 moles of CH_3OH with (IV) (R = C_2H_5) give a 58% yield of B-n-butyl-B-dimethoxy-N-triethyl borazol (VI) ($C_{12}H_{30}B_3N_3O_2$) (b.p. 147-150°C (2 mm Hg), d_4^{20} = 0.9565, n_D^{20} = 1.4608, MR = 80.5):

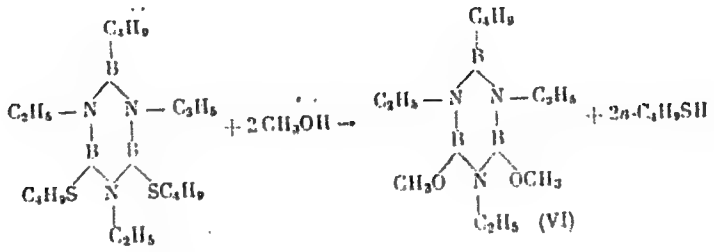
Card 4/8

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/062/62/000/004/005/013
B110/B101

Organo-boron compounds. ...



B-alkyl-B-dialkyl mercapto derivatives of borazol react even more readily with primary and secondary amines: 2 moles of methyl amine with (V) or (IV) ($R = C_2H_5$) give a 73-74% yield of B-ethyl-B-di-(methylamino)-N-triethyl borazol (VII, $R = C_2H_5$) ($C_{10}H_{28}B_3N_5$) (b.p. 101-103°C (0.3 mm Hg), $d_4^{20} = 0.9748$, $n_D^{20} = 1.4850$, MR = 73.8) and B-n-butyl-B-di-(methylamino)-N-triethyl borazol (VII, $R = n\text{-}C_4H_9$)

Card 5/8

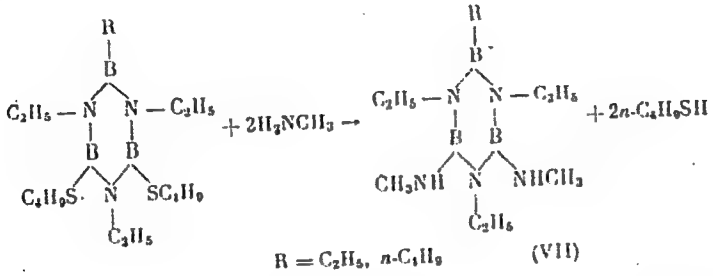
APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/062/62/000/004/005/013
B110/B101

Organo-boron compounds. ...

($C_{12}H_{32}B_3N_5$) (b.p. 100-105°C (0.1 mm Hg), d_4^{20} = 0.9557, n_D^{20} = 1.4870, MR = 83.7):



(IV) or (V) (R = C_2H_5) with dimethyl amine give a 70-75% yield of B-ethyl-B-di-(dimethylamino)-N-triethyl borazol (VIII, R = C_2H_5) ($C_{12}H_{32}B_3N_5$) (b.p. 88-90°C (0.3 mm Hg), d_4^{20} = 0.9359, n_D^{20} = 1.4830, MR = 86.50) and B-n-butyl-B-di-(dimethylamino)-N-triethyl borazol

Card 6/8

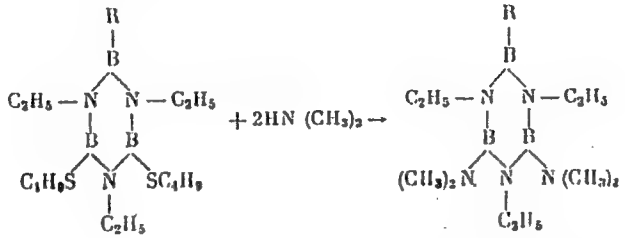
APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/062/62/000/004/005/013
B110/B101

Organo-boron compounds. ...

(VIII, R = n-C_4H_9) ($C_{14}H_{36}B_3N_5$) (b.p. 110-115°C (0.05 mm Hg), d_4^{20} = 0.9333, n_D^{20} = 1.4845):



R = C_2H_5; n-C_4H_9 (VIII)

The English-language reference reads as follows: G. Ryschkewitsch, T. Harris, H. Sisler, J. Amer. Chem. Soc., 80, 4515 (1958).

Card 7/8

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/062/62/000/004/005/013
B110/B101

Organo-boron compounds. ...

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: November 1, 1961

Card 8/8

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.F., kand. tekhn. nauk

Testing reed harvesting machines. Trakt. i sel'khozmash. 33 no.10:27-28 O '63. (MIRA 17:1)

1. NIISTROYKAMYSh.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.F.

AID Nr. 991-1 17 June

BORAZINE POLYMERS (USSR)

Mikhailov, B. M., and A. F. Galkin. IN: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, Apr 1963, 641-645.

S/062/63/000/004/007/022

Borazine polymers have been synthesized by polycondensation of 2, 4, 6-tris-(butylmercapto)-1, 3, 5 -trimethylborazine (I) or 2, 4, 6-tris(butylmercapto)-1, 3, 5-triethylborazine (II) in the case of three-dimensional polymers and by polycondensation of 2-butyl-4, 6-bis(butylmercapto)-1, 3, 5-trimethylborazine (III) or 2-butyl-4, 6-bis(butylmercapto)-1, 3-5-triethylborazine (IV) in the case of linear polymers, all four with hexamethylenediamine and with 2, 2-bis(p-hydroxyphenyl)propane, decamethyl-1, 9-dihydroxypentasiloxane, or diphenylsilanediol. Polycondensation of I and II with hexamethylenediamine in a 1:1.5 ratio in o-xylene at 125°C gave a quantitative yield of polymers (V) and (VI), respectively. Polymers V and VI are heat-resistant yellow powders insoluble in the common organic solvents; they hydrolyze in air and decompose at 370°C and 390°C, respectively, in an N_2 atmosphere. Polycondensation of I with diphenylsilanediol

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

AID Nr. 991-1 17 June

BORAZINE POLYMERS [Cont'd]

S/062/63/000/004/007/022

in a 1:1.5 ratio in ether gave polymer (VII), a heat-resistant colorless powder insoluble in benzene or ether but soluble in tetrahydrofuran or dioxane at room temperature; it hydrolyzes in air and melts at 340-360°C in an N_2 atmosphere. Polycondensation of III or IV in benzene with hexamethylenediamine in a 1:1 ratio gave a quantitative yield of polymers (VIII) and (IX), respectively, brittle substances that are insoluble in organic solvents, hydrolyze in air, H_2O, or alcohols, and decompose above 400°C. Polycondensation of III or IV with 2, 2-bis(p-hydroxyphenyl)propane in ether gave polymers (X) and (XI), respectively, amorphous, colorless powders which are soluble in boiling dimethylformamide and hydrolyze in air, H_2O, or alcohols. Polymer X melts at ~ 220°C, and XI softens at 195°C. Polycondensation of III with diphenylsilanediol in ether yielded polymer (XII), an oil with a molecular weight of ~ 1200. On heating at 200°C in a vacuum, XII became a brittle solid having a softening point of ~ 250°C and hydrolyzing in air. Polycondensation of III with decamethyl-1, 9-dihydroxypentasiloxane in ether yielded dimer (XIII), which had a molecular weight of ~ 1100. On heating in vacuum, XIII formed an elastic polymer which does not hydrolyze in air and melts at 147-149°C. The work was carried out at the Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR.

[NI]

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

NIKITINA, A.N.; PETUKHOV, V.A.; GALKIN, A.F.; FEDOTOV, N.S.; BUBNOV, Yu.N.; ARONOVICH, P.M.

Absorption spectra of organoboron compounds in the vacuum ultraviolet region. Opt. i spektr. 16 no.6:976-983 Je '64. (MIRA 17:9)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 33262-66 EWT(m)/T RM/WW/JW/JWD

ACC NR: AR6016188 SOURCE CODE: UR/0058/65/000/011/D021/D021

AUTHOR: Nikitina, A. N.; Petukhov, V. A.; Galkin, A. F.; Fedotov, N. S.; Bubnov, Yu. N.

55
B

TITLE: Absorption spectra of boro-organic compounds in the vacuum-ultraviolet region

SOURCE: Ref. zh. Fizika, Abs. 11D156

REF SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 3, vyp. 1, 1964, 369-383

TOPIC TAGS: uv spectrum, absorption spectrum, boron compound, electron spectrum, line intensity, Raman spectrum

ABSTRACT: The authors investigated the electronic absorption spectra of solutions of boro-organic compounds of aromatic and non-aromatic series, and also substituted borazols in the region ~1700 - 3000 Å. The integral intensities of the lines (of the benzene ring) were measured in the Raman spectra of certain boro-organic compounds of the aromatic series. The strong interaction between the boron atom and the aromatic radicals was observed, which was especially strongly manifest in short-wave electron transitions. With increasing interaction the intensity of the corresponding bands decreases. The changes of the spectra observed in the borazols are analogous to the changes of the spectra of the corresponding benzene substitutes. [Translation of abstract]

SUB CODE: 20, 07/

Card 1/1 dy

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

ACC NR: AP7006019 SOURCE CODE: UR/0203/66/006/005/0914/0919

AUTHOR: Galkin, A. I.

ORG: Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation, SO AN SSSR (Institut zemnogo magnetizma ionosfery i rasprostraneniya radiovoln SO AN SSSR)

TITLE: Standard processing of data of panoramic vertical sounding of the ionosphere on an electronic computer

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 5, 1966, 914-919

TOPIC TAGS: algorithm, electronic computer, data processing

ABSTRACT: This paper presents the general principles and gives a model of an algorithm for the standard processing of data from panoramic vertical sounding of the ionosphere on an electronic computer. The problem was formulated as follows: by computer analysis of all the recorded parts of the height-frequency characteristic, determine the parameters of all the formations present on the ionogram -- heights of the layers, their critical frequencies, the M3000 coefficients, etc., that is, perform a group of operations equivalent to standard processing of ionograms. The program is described in detail. It is noted that there are some forms of ionograms which will not be suited for processing. In order for the information not to be lost, the data are fed out in their initial form and must be analyzed by the observer. Orig. art. has: 2 figures and 14 formulas. [JPRS: 38,937]

SUB CODE: 09, 12 / SUBM DATE: 27May65 / ORIG REF: 006

UDC: 550.388.2

Card 1/1

092708 01

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

44600
S/169/62/000/012/094/095
D228/D307

9.9110

AUTHOR: Galkin, A.I.

TITLE: Seasonal changes in the diurnal variation of the ionization density of the F2 layer according to the data of polar stations

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 12, 1962, 28, abstract 12G201 (Inform. byul. Sov. antarkt. ekspeditsii, no. 25, 1961, 43-47)

TEXT: The following conclusions are drawn from an examination of median diurnal f_0F2 variations at 5 Antarctic stations (Mirnyy, Vostok, Holly Bay, Dumont d'Urville and Little America) and 5 Arctic stations. 1) The seasonal variation of peak (without regard to the hour of the day) f_0F2 values has two maxima in equinoctial periods and resembles that in middle latitudes. 2) In summer in Antarctica the diurnal variation of f_0F2 has a distended peak, which starts about noon local time. The low range of the diurnal variation corresponds to small changes in the elevation of the sun

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Seasonal changes ...

in the summer period. Holly Bay differs greatly from other stations in its diurnal variation. Here the maximum of f_0F2 is observed at night, and the f_cF2 values are much higher than at other stations. The summer characteristics of the ionosphere are very similar in the Arctic and the Antarctic, which implies that there are identical ionization conditions in both hemispheres. 3) In winter in the polar region (where there is no polar night) seasonal f_0F2 variations differ little from those in middle latitudes. Despite the small inflow of ultraviolet radiation, diurnal variations are well expressed on the polar cap, but at stations with close geographic conditions they differ rather sharply. Evidently, under the conditions of the polar night, the distribution of ionization largely depends on the geomagnetic coordinates.

[Abstracter's note: Complete translation]

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.I.

Some problems in automatic data processing of panoramic vertical sounding. Geomag. i aer. 2 no.4:782-790 Jl-Ag '62. (MIRA 15:10)

1. Institut zemnogo magnetizma ionosfery i rasprostraneniya radiovoln Sibirskogo otdeleniya AN SSSR.
(Ionosphere--Observations) (Electronic calculating machines)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 9777-66 EWT(d)/EWT(l)/EEC(k)-2/FCC/EWP(l)/EWA(h) IJP(c) BB/GG/GW
ACC NR: AP5025479 SOURCE CODE: UR/0203/65/005/005/0884/0891

AUTHOR: Galkin, A. I.; Dvinskikh, N. I.

ORG: Institute of Earth Magnetism, Ionosphere, and Radio Wave Propagation SO AN SSSR (Institute zemnogo magnetizma, ionosfery y rasprostraneniya radiovoln SO AN SSSR)

TITLE: Electronic computer data processing of the vertical panoramic zoning of the ionosphere

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 5, 1965, 884-891

TOPIC TAGS: computer technology, data processing, algorithm, ionosphere, computation calculation

ABSTRACT: The existing methods of even a preliminary data-processing of the vertical panoramic zoning of the ionosphere and especially the programming for computing the N-h profiles cannot be handled judiciously by electronic computers. An algorithm was suggested, assigning the entire task of the preliminary data-processing to the computer. The algorithm yields a programming by virtue of which a reliable high-frequency characteristic is obtained from the registered

Card 1/2 UDC: 550.388.2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 9777-66
ACC NR: AP5025479

preliminary data. The time coordinates of all signals, irrespective of whether or not the signals carry useful information, are fed into the computer. The computer performs the selection of useful signals based on the analysis of the time intervals between separately registered impulses while some a priori information concerning the structure of the layers of the ionosphere is utilized. The sifting of noise and the construction of the ramification of the high-frequency characteristic are performed simultaneously. At the conclusion of the program all the smooth sections of the high-frequency characteristic are singled out, yielding the standard characteristic of the ionosphere (the altitudes of the layers and their critical frequencies). The smooth sections of the high-frequency characteristic are subsequently used for the construction of N-h profiles. The description of the program is given in operator form. Orig. art. has: 4 figures.

SUB CODE: 09,04/SUBM DATE: 11Aug64/ NR REF SOV: 004/ OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

S/726/58/000/001/003/004
E195/E385

AUTHORS: Galkin, A.M., Gorlov, O.G., Kotova, A.R., Kosov, I.I., Petrov, A.V., Serov, A.D., Chernov, V.N. and Yakovleb, V.I.

TITLE: Investigation of the vital activity of animals during flight in an airtight rocket cabin to an altitude of 212 km

SOURCE: Predvaritel'nyye itogi nauchnykh issledovaniy s pomoshch'yu pervykh sovetskikh iskusstvennykh sputnikov Zemli i raket; sbornik statey. no. 1. XI razdel programmy MGG (rakety i sputnik). Moscow, Izd-vo AN SSSR. 112 - 129

TEXT: The behavior of animals during high-altitude flight in rockets as well as their state of health and changes registered after the flight have been studied in the USSR since 1949. The results of investigations carried out on 14 dogs of 5 - 7 kg in weight are described. Their blood pressure, pulse, respiration, before, during and after the flight were registered, cardiograms were made and their behavior during the flight filmed. A short

Card 1/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Investigation of ....

description of the airtight cabin and its equipment is given. The conditions of rocket flights to altitudes of 100 to 212 km did not produce sudden changes from the normal in the physiological functions of animals nor in their behavior and health, kept under control after the flight. Some of the animals used in the tests were narcotized. During the active part of the flight the heartbeats, breathing and blood pressure of the non-narcotized animal usually increased. In the period of dynamic weightlessness the registered physiological parameters reached a high level with a decreasing tendency during the first 2-3 minutes. The return to the starting level of physiological conditions took place after 5 -6 min, of the action of dynamic weightlessness. There are 12 figures and 5 tables.

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

BUKHMAN, Ya.Z.; MUTAYEV, R.S.; BIKCHENTAYEV, G.K.; SIMAKOV, P.G.; GALKIN, A.M.

Improvement of working conditions in strip mines. Bezop.truda v prom. 9 no.4:15-16 Ap '65. (MIRA 18:5)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 11266-66 EWT(1)/EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c) JD/HM

ACC NR: AT5027918 SOURCE CODE: UR/2536/65/000/062/0038/0047

AUTHOR: Sakharov, G. S. (Candidate of technical sciences); Manuylov, V. F. (Engineer); Galkin, A. M. (Engineer)

ORG: Institute of Aviation Technology (Aviatsionnyy tekhnologicheskiy institut)

TITLE: Investigation of the bonding of SAP

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 62, 1965. Obrabotka davleniyem legkikh splavov (Pressue working of light alloys), 38-47

TOPIC TAGS: aluminum, SAP, SAP bonding, aluminum bonding, pressure bonding, bond strength

ABSTRACT: Experiments have been made to determine the feasibility and optimum conditions for bonding aluminum to SAP and SAP to SAP. SAP and aluminum bars 13 mm in diameter and 45 mm long, preheated to 150—600C, were set against each other in a die (see Fig. 1) and upset with a reduction of 40—90% either with a hammer or in a 20-ton hydraulic press. In the case of SAP-to-aluminum bars, a clearly defined boundary was observed. The failure almost always occurred on aluminum, so the strength of the bond could not be determined. In SAP-to-SAP bonds no boundary was observed. The strongest bonds were produced by hammer upsetting with a reduction of 67.5—82.5% at 400-550C and by press upsetting with a reduction of 75—82.5% at 400—600C. The maximum tensile strength of the bonds was 27.1 and 29.35 kg/mm^2, respectively. The majority of specimens failed in the bond, with an extenstion of

Card 1/2 UDC: 669.716:539.37803

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

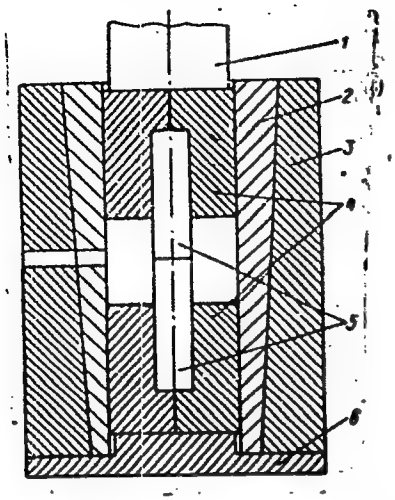


Fig. 1. Device for upsetting of specimens

1 - Punch; 2 - detachable liner; 3 - container; 4 - detachable dies; 5 - specimens to be upset; 6 - base plate.

fracture into the bare metal. With increasing reduction in upsetting, lower temperatures are recommended. The central zone of the specimens has the highest strength. Farther from the center, the bond strength is noticeably lower. Orig. art. has 11 figures and 3 tables.

[MS]

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 11266-66

ACC NR: AT5027918

SUB CODE: 11, 13/ SUBM DATE: none/ ATD PRESS: 4176

Joining of dissimilar metals 18

BC

Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GRIZHENYA, I.F., inzh.; KUZOVLEV, A.I., inzh.; KAZANSKIY, V.V., inzh.; GALKIN, A.S., inzh.

Blast furnace gas purification in the [illegible] of ferromanganese. Stal' 22 no.1:89-92 Ja '62. (MIRA 14:12)

1. Kosogorskiy metallurgicheskiy zavod i Yuvenergochermet.
(Ferromanganese--Metallurgy)
(Gases--Purification)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.S.

[redacted]

BEZUGLY, P.A., GALKIN, A.S., PUSHKIN, A.I.

"Magnetoacoustic oscillations and fermi surface in aluminum."

Report submitted for the 8th Intl. conference on Low Temperature Physics
London, England, 16-22 Sep 1962

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A. /(Editor)

"Pechatnye Gazety Arktiki (Sbornik)," Moscow, 1940

II

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A.I., mladshiy nauchnyy sotrudnik

Seasonal fluctuations in the diurnal variation of the ionization density of the F_2-layer according to the data of some polar stations. Inform. biul. Sob. antark. eksp. no.25:43-47 '61. (MIRA 14:5)

1. Tret'ya kontinental'naya ekspeditsiya.
(Antarctic regions—Ionospheric research)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GINDIN, Ye.Z.; LEYKIN, G.A.; LOZINSKIY, A.M.; MASHKVICH, A.G.; AL'PERT, Ya.L.; CHUDESENKO, E.F.; SHAPIRO, B.S.; GALKIN, A.M.; GORLOV, O.G.; KOTOVA, A.P.; KOSOV, I.I.; PETROV, A.V.; SKROV, A.D.; CHERNOV, V.N.; YAKOVLEV, V.I.; MIKHAYLOV, A.A., otvetstvennyy red.; BEN'KOVA, N.P., doktor fiz.-mat. nauk, otvetstvennyy red.; SILKIN, B.I., red.; PODOL'SKIY, A.D., red.; PEUSAKOVA, T.A., tekhn. red.

[Preliminary results of the scientific research on the first Soviet artificial earth satellites and rockets; collection of articles in the 11th section of the IGY program (rockets and satellites)] Predvaritel'nye itogi nauchnyykh issledovanii s pomoshch'iu pervykh sovetskikh iskusstvennykh sputnikov zemli i raket; sbornik statei (XI razdel programmy MGG - rakety i sputniki). Moskva, Izd-vo Akad. nauk SSSR. No.1. 1958. 148 p. (MIRA 11:10)

1. Russia (1923- U.S.S.R.) Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. 2. Chlen-korrespondent AN SSSR (for Mikhaylov).
(Atmosphere, Upper—Rocket observations)
(Artificial satellites)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GUGUTSHIDZE, G.N.; GALKIN, A.M., inzh.

Improved design of anchors for strand reinforcement. Transp. stroi. 15 no.9:49-50 S '65. (MIRA 18:11)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

SAKH[illegible], [illegible]; [illegible], V.F., inzh.; G[illegible]IN, A.M., inzh.

[illegible] the [illegible] of the material SAP [sintered aluminum [illegible]]. Lindy Mall no.[illegible]:38-47 '65. (MIRA 18:10)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A. S.

AFANAS'YEV, L.L., kandidat tekhnicheskikh nauk; GALKIN, A.S., inzhener, retsenzent; PLATONOV, A.I., inzhener, retsenzent; SHAYKIN, A.M., kandidat tekhnicheskikh nauk, redaktor.

[Organization of automobile transportation] Organizatsiia avtomobil'nykh perevozok. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1953. 339 p. (MLRA 7:7)
(Transportation, Automotive)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

SHAMIN, A.A., gornyy inzh.; BELEN'KIY, A.M., gornyy inzh.; GALKIN, A.V., gornyy inzh.

Pillar method of mining flat seams developed without brushing the rock walls. Ugol' Ukr. 5 no.3:20-21 Mr '61. (MIRA 14:3)
(Donets Basin—Coal mines and mining)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

APRATOV, I. I.; KANDELYA, Ya. I.; GALKIN, A. V.

Operating practice of the UMK narrow-range unit in the "Proletarskaia-Glubokaia" Mine. Ugol' 38 no.4:34-39 Ap '63. (MIRA 16:4)

(Donets Basin—Coal mining machinery)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

26467
S/117/60/000/011/001/003
D219/D302

27.2100

AUTHORS: Buyanov, P. V., Galkin, A. V., Karpov, Ye. A., Samukhin, N.V., Terent'yev, V. G., Shevchenko, A. I.

TITLE: Contra-indications to the breathing of oxygen at increased pressure

PERIODICAL: Voyenno-meditsinskiy zhurnal, no. 11, 1960, 64 - 68

TEXT: The authors wished to study the effect of systematic breathing of oxygen under pressure and discover medical contra-indications to its use, especially with regard to personnel suffering from physical defects which do not render them unfit for flying duty. 125 persons, 20 - 40 years old, underwent pressure chamber tests and prolonged clinical observation. All were well and fit for flying duty. 43 had various defects such as pleural synechia and adhesions, hypertensive neurocirculatory dystonia (5), 1st degree thyroid enlargement without malfunction (4) and so on. Normal clinical records were taken and analyses done

Card 1/ 3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

Contra-indication to the breathing...

plus X-Ray, neurological, electrophysiological and ENT examination. Subjects took part in 1 - 97 experiments at 7 - 14 day intervals. Physiological effects were noted immediately; rise in heat and respiration rate, arterial pressure, bioelectric respiratory muscle activity; ECG variation; fall of oxyhemoglobin level to 60 - 80% (slowing of circulatory rate; changes in latent period of conditioned motor reflexes; occasional subcutaneous emphysema. Subjects usually felt well after tests complaining rarely of fatigue or headache. Clinical examination generally revealed slowing of pulse (by 6 - 18 beats), increase in venous pressure, moderate increase in arterial pressure, slight fall in pulse pressure and increase in heart size. In over 30% of cases heart murmurs - usually pulmonary and aortic- appeared: No pathological ECG changes save extrasystoles in 4 cases. Changes were often recorded in capillary formation, phethysmograph curves and in vasomotor reflexes. Aftereffects: Lung vital capacity decreased by 200 - 400 ml. A third of the subjects had scattered dry rales. Lung X-Ray showed occasional

Card 2/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

GALKIN, A. V. Aviation Medicine

GALKIN, A. V., P. V. Buyanov, Ye. A. Karpov, N. V. Samukhin, V. G. Terent'yev, and A. I. Shevchenko are co-authors of the article, "Contraindications to Oxygen Respiration under Increased Pressure."

SO: Voyenno-Meditsinskiy Zhurnal, No. 11, Nov. 1960 (Rec'd Aug 60), JPRS: 7993, 28 March 1961, Unclassified.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 11364-67 EWT(1) SCTB DD/GD

ACC NR: AT6036509 SOURCE CODE: UR/0000/66/000/000/0081/0083

AUTHOR: Buyanov, P. V.; Galkin, A. V.; Terent'yev, V. G.; Sheludyakov, Ye. Ye.; Pisarenko, N. V.; Yaroshenko, G. L. 32

ORG: none

TITLE: Problems of the selection of candidates for special crews [Paper presented at conference on problems of space medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 81-83

TOPIC TAGS: cosmonaut selection, bioastronautics, space physiology, space psychology, psychophysiology, cosmonaut training

ABSTRACT: The systematic exposure of young test pilots to aviation or space-flight conditions is of importance relative to perfecting methods for selecting pilots and cosmonauts. Considering the caliber of professional activity, the test pilot must be in excellent physical and mental condition.

Selection takes place in three stages: preliminary ambulatory selection, stationary examination in special medical establishments, and elimination during the first months of occupational activity.

Card 1/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 11364-67

ACC NR: AT6036509

During preliminary selection, the medical commission was given documents describing anamnesis data, general and physical development, and medical treatment in the preceding year. After familiarization with these documents, nearly half the applicants were rejected due to therapeutic status or poor eyesight. During preliminary ambulatory examinations, medical specialists (therapists, otolaryngologists, neuropathologists, surgeons) analyzed blood, urine, EKG's during rest and after exercise, x-ray films of thoracic organs and nasal accessory sinuses, and conducted vestibular and other functional tests. In some cases, spinal x-rays, pressure chamber exposure, etc., were conducted.

Rejections during the first examination phase were high. The main reasons for rejection were ear, nose, and throat ailments, neurocirculatory dystonia, and vestibulo-autonomic instability.

During the stationary phase, an expanded program of clinical, physiological, and specialized tests was used. From 25 to 50% of the candidates who had passed the first phase of examinations were rejected. The main causes of rejection were diseases of internal organs (nearly half the rejects), vestibulo-autonomic instability, ear, nose, and throat diseases, and spinal disorders.

Card 2/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

L 11364-67
ACC NR: AT6036509

In recent years, rejection of candidates during the second phase has declined as a result of a more detailed examination during the first phase and new methods of examination. For instance, substitution of the standard OR-10 vestibular test with I. I. Bryanov's test (summation of vestibular stimuli during Coriolis accelerations) significantly decreased the number of rejects due to vestibular disorders. At the same time, ear, nose, and throat rejects were more accurately diagnosed by substituting otoscopy and manometric examinations (Boyachev and Gerasimov manometers) with pressure chamber tests. Spinal x-rays during the ambulatory phase could not be justified.

The occupational activity of a number of candidates produced some changes which precluded their further participation and caused their rejection from testing work. About 10% of the candidates were found to be unsatisfactory during this phase.

These data permit the examiner to foresee probable deviations in health under occupational conditions during the selection phase, to evaluate individual methods applicable to selection, and to prognose work capacity under the influence of external factors. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 05,06 / SUBM DATE: 00May66
Card 3/3

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6

KREYTER, V.M.; KREYTER, D.S.; ARISTOV, V.V.; AZHGIREY, G.D.; REZVOY, D.P.; KOZYRENKO, V.N.; LAZ'KO, Ye.M.; RUSETSKAYA, G.G.; GALKIN, B.I.; YERMAKOV, N.P.; NEVSKIY, V.A.; VOZDVIZHENSKIY, B.I.; KULICHIKHIN, N.I.; POPOV, I.N.

Nikolai Vasil'evich Baryshev, 1903-. Izv.vys.ucheb.zav.; geol. i razv. 6 no.5:95-96 My '63. (MIRA 18:4)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R000614110020-6"